

Wiesbaden, 18<sup>th</sup> May 2022, Thomas Szech & Florian Strobel

# Lithium-Ion Batteries

## Full of energy - full of risk?

Ihr kooperativer Rückversicherer.



# Agenda

- 1. Application and technical basics** 5
2. Risk prevention and fire fighting 9
3. Exposures in Casualty 17
4. Conclusions 20

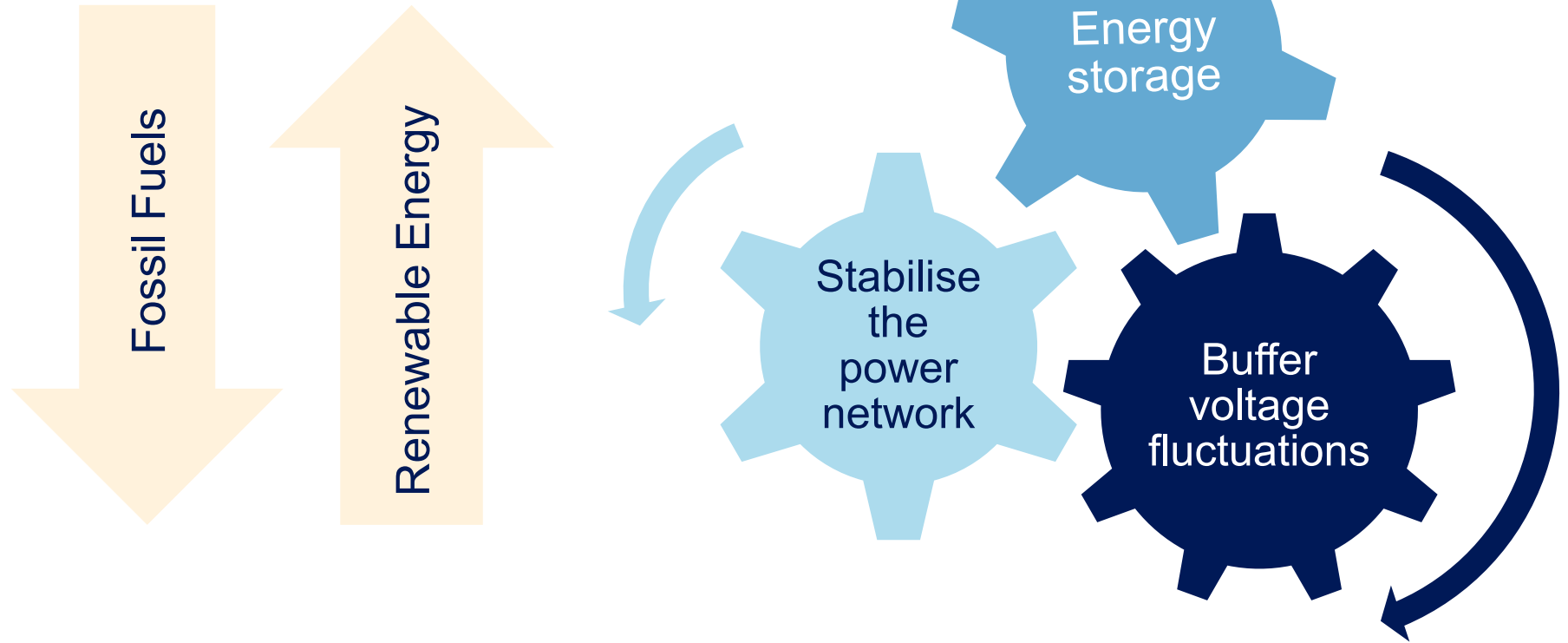
# Burning Lithium-Ion Batteries

And it happens again and again and again...



# Burning Lithium-Ion Batteries

## So why do we still use them?



# Lithium-Ion Batteries

## BESS – what is it all about?



### Outside

„Like a warehouse“ or  
„like a shipping container“



### Inside

„Like a server facility“

# Lithium-Ion Batteries

## Applications on a smaller scale

### Prosumer: Households



### Prosumer: SME





## Some technical basics

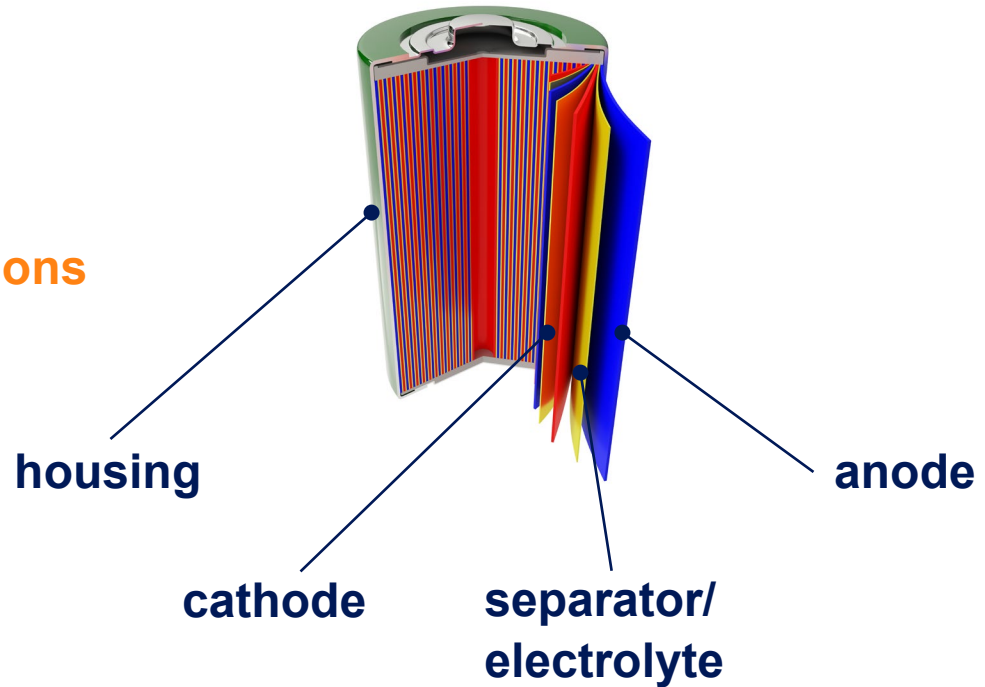
### Built-up of a cell

It is

› nanotechnology

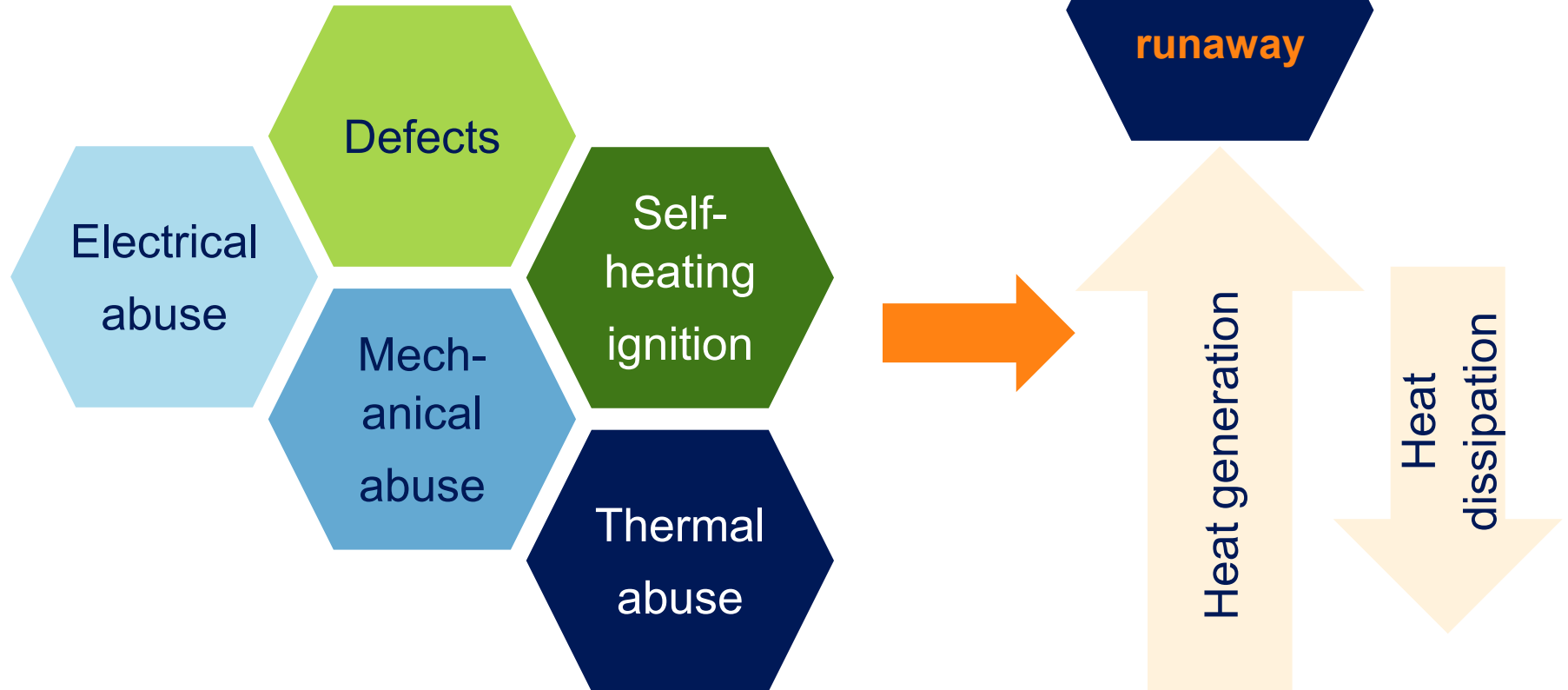
meaning it is

› sensitive to shock and vibrations



# Battery fires

## Why and how?



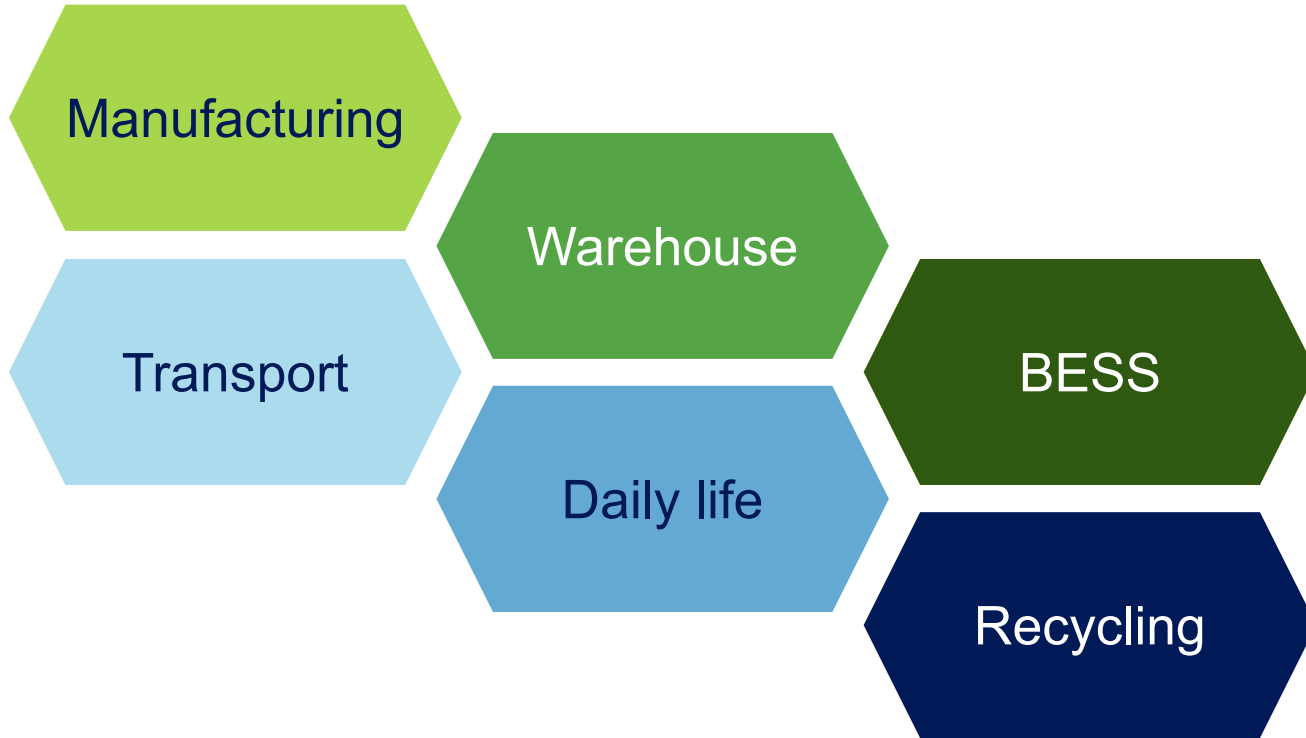


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# Risk prevention & fire fighting

## Exposure according to application



# Risk prevention & fire fighting

## Battery handling: a challenge in logistics and trade

### How it should be

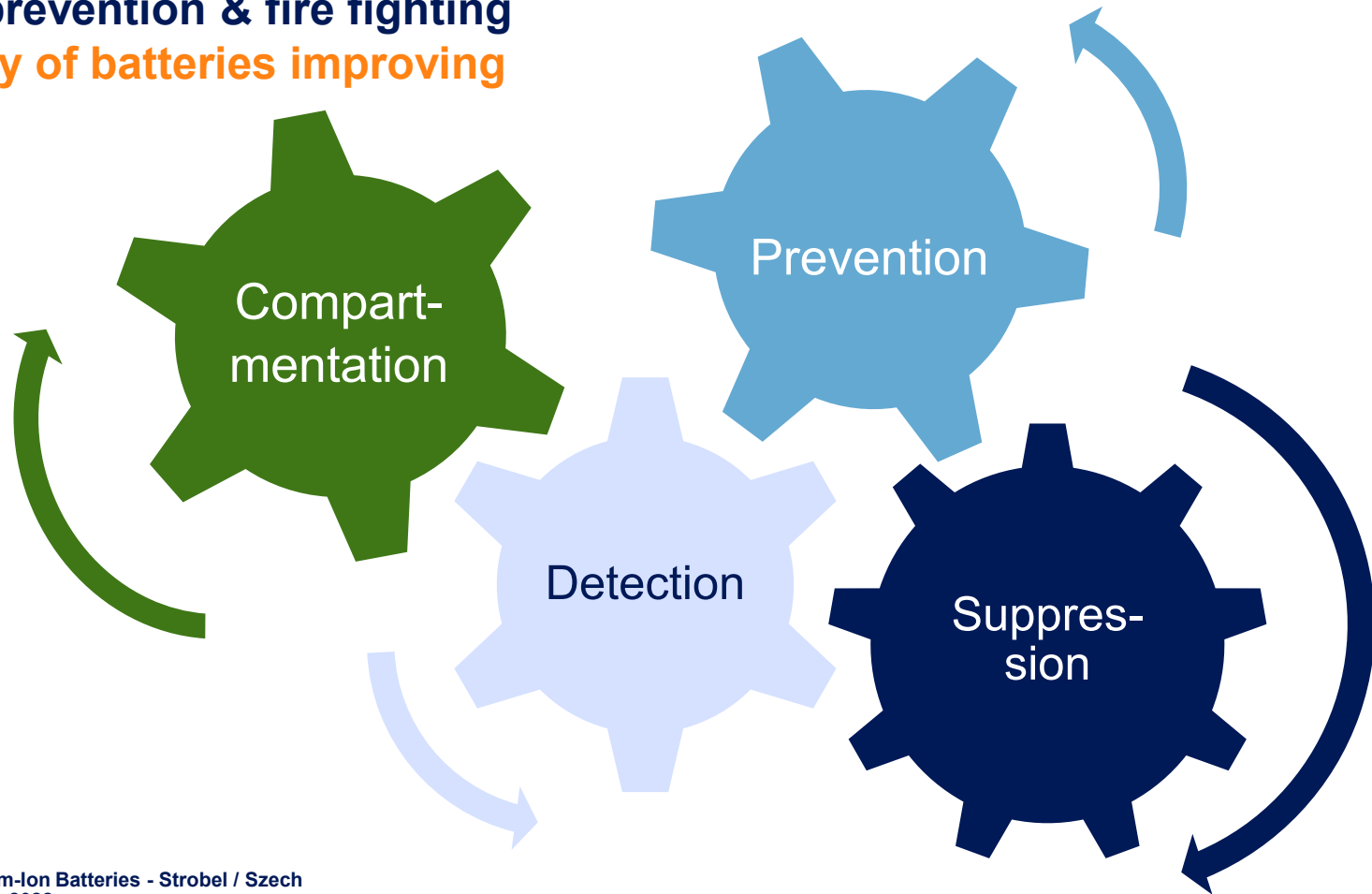
- Encapsulation of individual battery units
- Separation (spatial separation / fire compartment)
- Safety distance to combustibles
- Adequate alarms & automatic fire extinguishing units

### Reality

- Mixed warehouses
- Chaotic warehousing

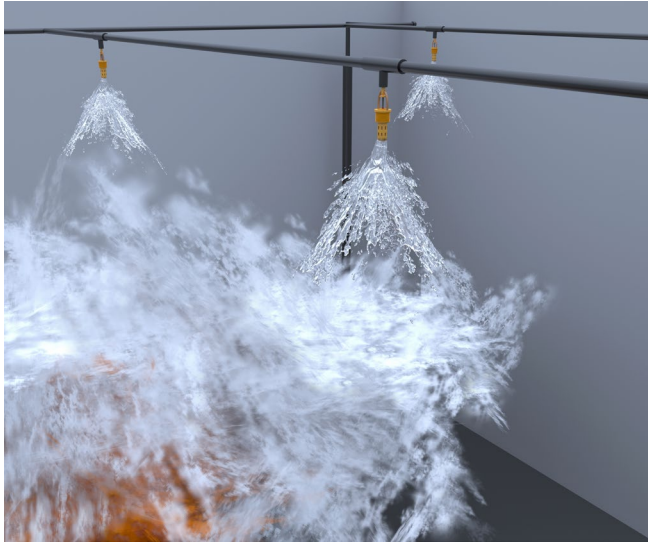
# Risk prevention & fire fighting

Quality of batteries improving



# Risk prevention & fire fighting

## Sprinkler – always a good idea 😊



**Prevents fresh air to reach the fire**

**Prevents radiation feedback from the surrounding walls**

**Absorption of radiated heat by the water-mist droplets**

**Individual protection concept**

**BI must be taken into account**

**Water damage must be neglected**

## Risk prevention & fire fighting

### The fire fighter's perspective

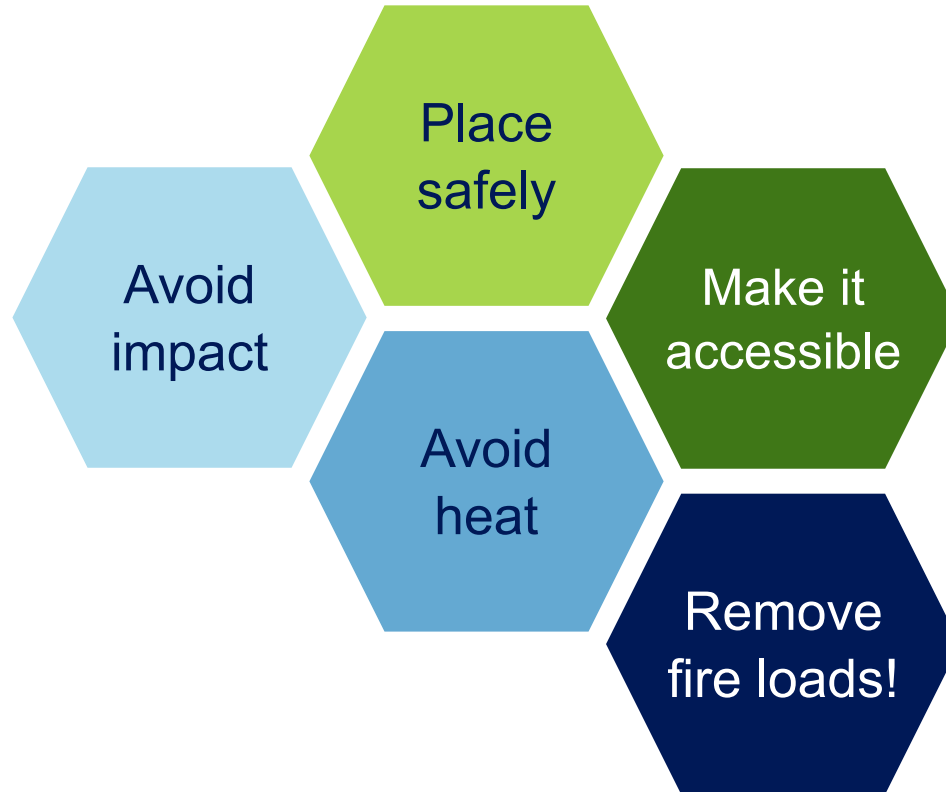
Safe firefighting requires a different intervention model!

- “Warehouse systems are a big worry, there is no containment! Fire fighters will not go into such buildings.”
- “Fire fighters will not take health risks to extinguish battery fires.”
- “Do not count on response times - assumptions are flawed, will wait for technical expertise – **plan for failure and recovery.**”

What does that mean for **EML calculations?**

# Risk prevention & fire fighting

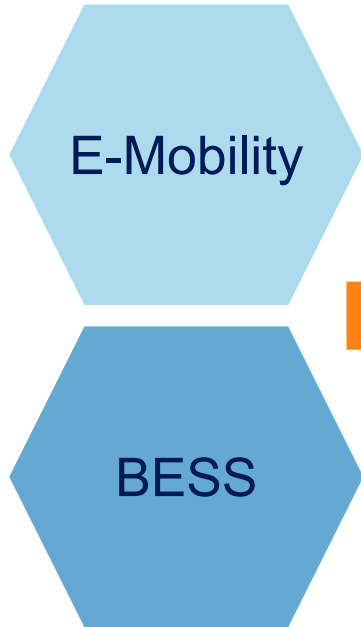
## Safe charging is key





## Risk prevention

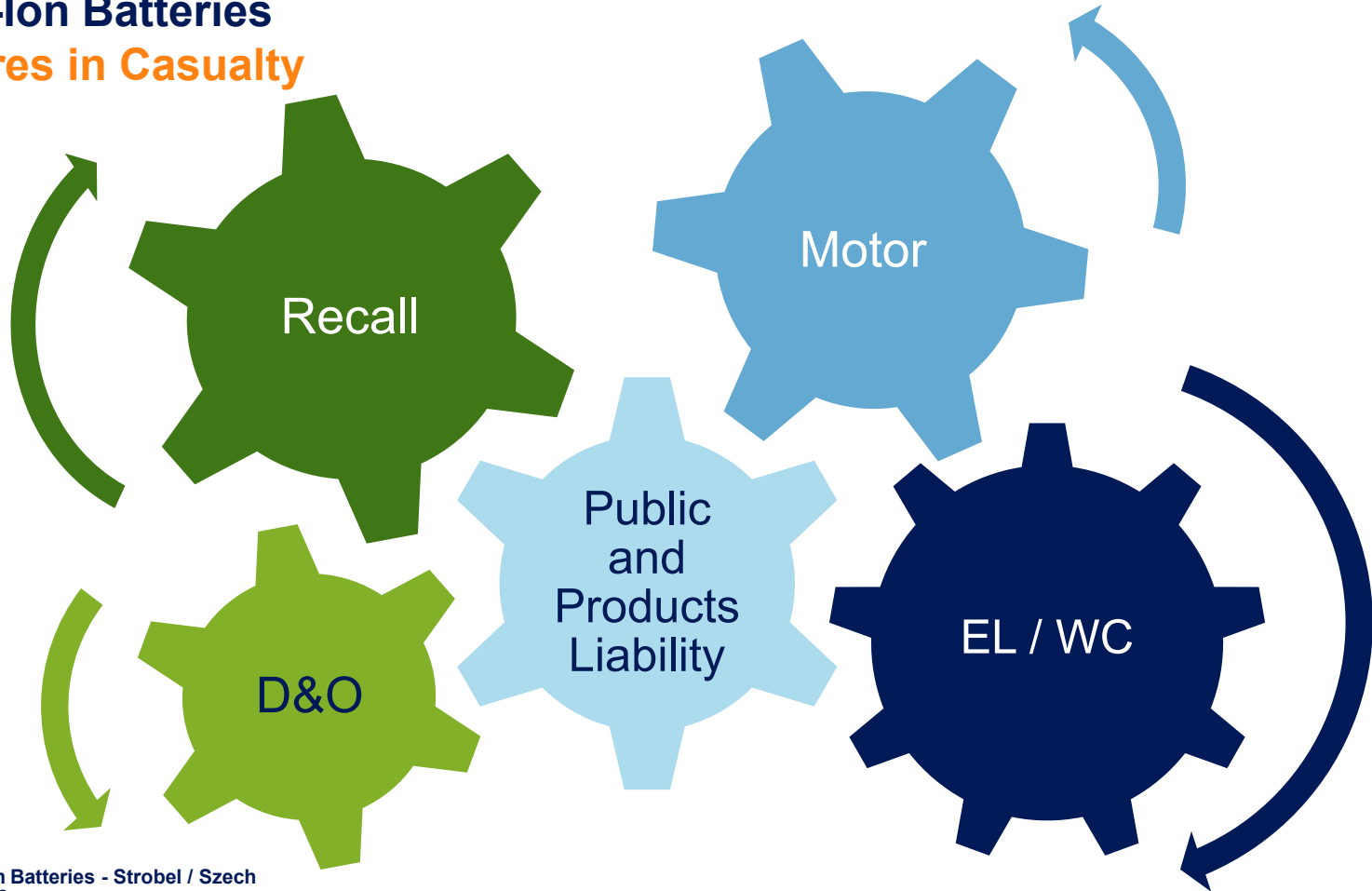
Last but not least: Do not forget cyber crime!



# Agenda

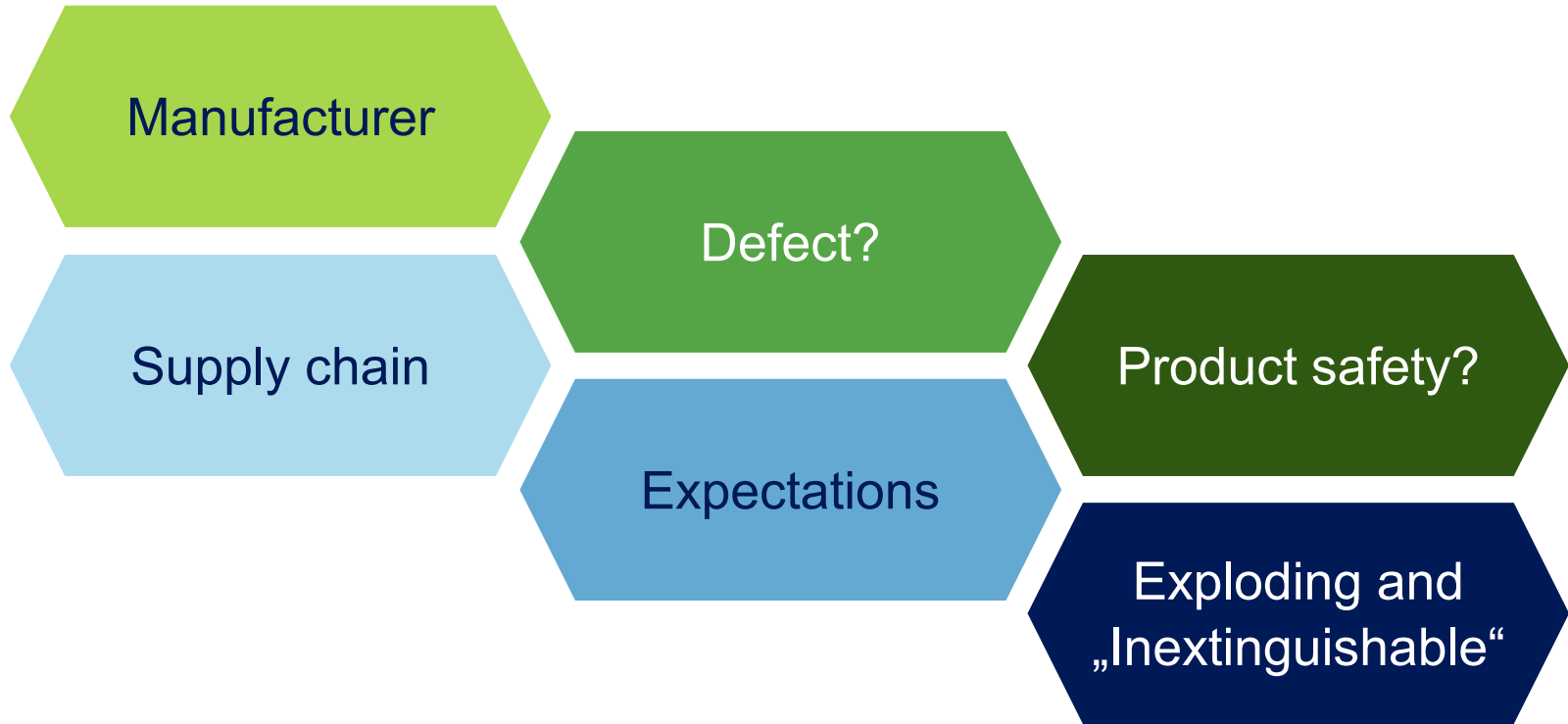
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# Lithium-Ion Batteries Exposures in Casualty



# Lithium-Ion Batteries

## Product Liability claims on the horizon?



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## Outlook and conclusion

### Lithium-ion batteries – manageable?



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